

AMENDMENTS

In The Claims:

1. (Currently Amended) A system for estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

first logic for determining a count of the number of received symbols in a predetermined number of received symbols that fall within one or more predetermined collection areas located on a symbol constellation defining a plurality of symbols, wherein the one or more predetermined collection areas are exclusive of the plurality of symbols defined by the symbol constellation;~~and~~

second logic for associating the count with a value, from which the estimated SNR – related parameter is derived, using one or more lookup tables; and

third logic for processing one or more symbols, received over the communication channel, using the SNR-related parameter.

2. (Original) The system of claim 1 wherein the symbols are quadrature symbols having in-phase (I) and quadrature (Q) components, the one or more collection areas are defined in relation to an I-Q plane, and the first logic determines if a received symbol falls into the one or more collection areas from the I and Q components of the symbol.

3. (Original) The system of claim 1 wherein the SNR – related parameter is E_s/N_0 .

4. (Original) The system of claim 3 wherein the second logic associates the count with a value of E_s/N_0 expressed in dB.

5. (Previously Presented) The system of claim 1 wherein the second logic associates the count with a value, from which the estimated SNR – related parameter is derived, using a plurality of lookup tables.

6. (Currently Amended) A system for estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

first logic for determining a count of the number of received symbols in a predetermined number of received symbols that fall within one or more predetermined collection areas having a size;~~and~~

second logic for associating the count with a value, from which the estimated SNR – related parameter is derived, using first and second lookup tables, wherein at least the first lookup table depends on a symbol constellation and the size of the one or more collection areas; and

third logic for processing one or more symbols, received over the communication channel, using the SNR – related parameter.

7. (Original) The system of claim 6 wherein the symbol constellation is an 8-PSK symbol constellation.

8. (Original) The system of claim 6 wherein the symbol constellation is a QPSK symbol constellation.

9. (Currently Amended) A system for estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

first logic for determining a count of the number of received symbols in a predetermined number of received symbols that fall within one or more predetermined collection areas having a size;~~and~~

second logic for associating the count with a value, from which the estimated SNR – related parameter is derived, using first and second lookup tables, wherein each entry in the first table is the probability of a received symbol falling into the one or more collection areas at a given value of the SNR – related parameter, which comprises a corresponding entry in the second table, and

third logic for processing one or more symbols, received over the communication channel, using the SNR-related parameter.

10. (Original) The system of claim 9 wherein the second logic correlates the count with an estimate of the SNR – related parameter by (1) translating entries in the first table to count values through multiplication by the predetermined number of symbols; (2) determining which entries in the first table, after translation into count values, bound the count; (3) determining the corresponding entries in the second table; and (4) interpolating between the corresponding entries in the second table to arrive at the estimate of the SNR – related parameter.

11. (Currently Amended) A system for estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

first logic for determining a count of the number of received symbols in a predetermined number of received symbols that fall within one or more predetermined collection areas having a size; ~~and~~

second logic for associating the count with a value, from which the estimated SNR – related parameter is derived, using first and second lookup tables, wherein each entry in the first table is a count of the number of received symbols expected to fall into the one or more collection areas at a given value of the SNR – related parameter, which comprises a corresponding entry in the second table, and

third logic for processing one or more symbols, received over the communication channel, using the SNR-related parameter.

12. (Original) The system of claim 11 wherein the second logic associates the count with an estimate of the SNR – related parameter by (1) determining which entries in the first table bound the count; (2) determining the corresponding entries in the second table; and (3) interpolating between the corresponding entries in the second table to arrive at the estimate of the SNR – related parameter.

13. (Currently Amended) A system for scaling a symbol with a scaling factor derived from an estimate of an SNR – related parameter for one or more symbols received over the communication channel comprising:

first logic for determining a count of the number of received symbols in a predetermined number of symbols which fall within one or more predetermined collection areas located on a symbol constellation defining a plurality of symbols, wherein the one or more predetermined collection areas are exclusive of the plurality of symbols defined by the symbol constellation;

second logic for correlating the count with a value, from which the estimated SNR – related parameter is derived, using one or more lookup tables; and

third logic for scaling ~~a~~ one or more symbols, received over the communication channel, with a scaling factor derived from the estimated SNR – related parameter.

14. (Original) The system of claim 13 further comprising fourth logic for quantizing the scaled symbol.

15. (Original) The system of claim 13 wherein the value of the SNR – related parameter is E_s/N_0 expressed in dB, and the scaling factor is the value of E_s/N_0 converted into linear terms.

16. (Original) The system of claim 14 wherein the fourth logic quantizes the scaled symbol using a uniform quantization delta.

17. (Original) The system of claim 16 wherein the quantization delta is optimized around a predetermined E_s/N_0 value.

18. (Currently Amended) A system for estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

first means for determining a count of the number of symbols in a predetermined number of symbols which fall within one or more predetermined collection areas located on a symbol constellation defining a plurality of symbols, wherein the one or more predetermined collection areas are exclusive of the plurality of symbols defined by the symbol constellation;~~and~~

second means for associating the count with a value, from which the estimated SNR – related parameter is derived, using one or more lookup tables, and

third means for processing one or more symbols, received over the communication channel, using the SNR-related parameter.

19. (Currently Amended) A system for scaling a ~~received~~ symbol with a scaling factor derived from an estimate of an SNR – related parameter for one or more symbols received over the communication channel comprising:

first means for determining a count of the number of symbols in a predetermined number of symbols which fall within one or more predetermined collection areas located on a symbol constellation defining a plurality of symbols, wherein the one or more predetermined collection areas are exclusive of the plurality of symbols defined by the symbol constellation;

second means for associating the count with a value, from which the estimated SNR – related parameter is derived, using one or more lookup tables; and

third means for scaling a one or more symbols, received over the communication channel, with a scaling factor derived from the estimated SNR – related parameter.

20. (Original) The system of claim 19 further comprising fourth means for quantizing the scaled symbol.

21. (Original) The system of any of claims 1, 13, 18, or 19 in a second system which includes a decoder.

22. (Original) The second system of claim 21 wherein the decoder comprises a log-MAP decoder.

23. (Original) The second system of claim 22 implemented as one or more integrated circuit chips.

24. (Currently Amended) A method of estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

determining a count of the number of symbols in a predetermined number of received symbols which fall within one or more predetermined collection areas located

on a symbol constellation defining a plurality of symbols, wherein the one or more predetermined collection areas are exclusive of the plurality of symbols defined by the symbol constellation;~~and~~

correlating the count with a value, from which the estimated SNR – related parameter is derived, using one or more lookup tables; and

processing one or more symbols, received over the communication channel, using the SNR – related parameter.

25. (Original) The method of claim 24 wherein the symbols are quadrature symbols having in-phase (I) and quadrature (Q) components, the one or more collection areas are defined in relation to an I-Q plane, and the determining step comprises determining if a symbol falls into the one or more collection areas from the I and Q components of the symbol.

26. (Original) The method of claim 24 wherein the SNR – related parameter is E_s/N_0 .

27. (Original) The method of claim 26 wherein the correlating step comprises associating the count with a value of E_s/N_0 expressed in dB.

28. (Previously Presented) The method of claim 24 wherein the correlating step comprises associating the count with a value, from which the estimated SNR – related parameter is derived, using a plurality of lookup tables.

29. (Currently Amended) A method of estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

determining a count of the number of symbols in a predetermined number of received symbols which fall within one or more predetermined collection areas having a size;~~and~~

correlating the count with a value, from which the estimated SNR – related parameter is derived, using first and second lookup tables, wherein at least the first

lookup table depends on a symbol constellation and the size of the one or more collection areas; and

processing one or more symbols, received over the communication channel, using the SNR – related parameter.

30. (Original) The method of claim 29 wherein the symbol constellation is an 8-PSK symbol constellation.

31. (Original) The method of claim 29 wherein the symbol constellation is a QPSK symbol constellation.

32. (Currently Amended) A method of estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

determining a count of the number of symbols in a predetermined number of received symbols which fall within one or more predetermined collection areas having a size; ~~and~~

correlating the count with a value, from which the estimated SNR – related parameter is derived, using first and second lookup tables, wherein each entry in the first table is the probability of a received symbol falling into the one or more collection areas at a given value of the SNR – related parameter, which comprises a corresponding entry in the second table; and

processing one or more symbols, received over the communication channel, using the SNR – related parameter.

33. (Original) The method of claim 32 wherein the correlating step comprises associating the count with an estimate of the SNR – related parameter by (1) translating entries in the first table to count values through multiplication by the predetermined number of symbols; (2) determining which entries in the first table, after translation into count values, bound the count; (3) determining the corresponding entries in the second

table; and (4) interpolating between the corresponding entries in the second table to arrive at the estimate of the SNR parameter.

34. (Currently Amended) A method of estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

determining a count of the number of symbols in a predetermined number of received symbols which fall within one or more predetermined collection areas having a size; ~~and~~

correlating the count with a value, from which the estimated SNR – related parameter is derived, using first and second lookup tables, wherein each entry in the first table is a count of the number of received symbols expected to fall into the one or more collection areas at a given value of the SNR – related parameter, which comprises a corresponding entry in the second table; and

processing one or more of symbols, received over the communication channel, using the SNR – related parameter.

35. (Original) The method of claim 34 wherein the correlating step comprises associating the count with an estimate of the SNR – related parameter by (1) determining which entries in the first table bound the count; (2) determining the corresponding entries in the second table; and (3) interpolating between the corresponding entries in the second table to arrive at the estimate of the SNR parameter.

36. (Currently Amended) A method of scaling a symbol with a scaling factor derived from an estimate of an SNR - related parameter for one or more symbols received over a communication channel comprising:

determining a count of the number of symbols in a predetermined number of symbols which fall within one or more predetermined collection areas located on a symbol constellation defining a plurality of symbols, wherein the one or more predetermined collection areas are exclusive of the plurality symbols defined by the symbol constellation;

associating the count with a value, from which the estimated SNR parameter is derived, using one or more lookup tables; and

scaling ~~a~~one or more symbols, received over the communication channel, with a scaling factor derived from the estimated SNR – related parameter.

37. (Original) The method of claim 36 further comprising quantizing the scaled symbol.

38. (Original) The method of claim 36 wherein the value of the SNR – related parameter is E_s/N_0 expressed in dB, and the scaling factor is the value of E_s/N_0 converted into linear terms.

39. (Original) The method of claim 37 further comprising quantizing the scaled symbol using a uniform quantization delta.

40. (Original) The method of claim 39 wherein the quantization delta is optimized around a predetermined E_s/N_0 value.

41. (Currently Amended) A method of estimating an SNR – related parameter for one or more symbols received over a communication channel comprising:

a step for determining a count of the number of symbols in a predetermined number of symbols that fall within one or more predetermined collection areas located on a symbol constellation defining a plurality of symbols, including averaging, filtering or summing the count over a plurality of symbol groups, wherein the one or more predetermined collection areas are exclusive of the plurality of symbols defined by the symbol constellation;~~and~~

a step for associating the count with a value, from which the estimated SNR – related parameter is derived, using one or more lookup tables; and

a step for processing one or more symbols, received over the communication channel, using the SNR – related parameter.

42. (Currently Amended) A method of scaling a symbol with a scaling factor derived from an estimate of an SNR – related parameter for one or more symbols received over a communication channel comprising:

a step for determining a count of the number of symbols in a predetermined number of symbols that fall within one or more predetermined collection areas located on a symbol constellation defining a plurality of symbols, including averaging, filtering or summing the count over a plurality of symbol groups, wherein the one or more predetermined collection areas are exclusive of the plurality of symbols defined by the symbol constellation;

a step for associating the count with a value, from which the estimated SNR – related parameter is derived, using one or more lookup tables; and

a step for scaling ~~a~~ one or more symbols, received over the communication channel, with a scaling factor derived from the estimated SNR – related parameter.

43. (Original) The method of claim 42 further comprising a step for quantizing the scaled symbol.

44. (Currently Amended) A ~~processor~~ computer-readable readable medium encoded with a computer program ~~on which is stored a series of instructions~~ tangibly embodying any of the methods of claims 24, 36, 41 or 42.

45. (Currently Amended) A system comprising the computer-readable ~~processor readable~~ medium of claim 44 and a processor configured to access and execute the computer program encoded on the medium ~~series of instructions stored on the medium~~.

46. (Original) A system tangibly embodying any of the methods of claims 24, 36, 41, or 42, comprising a state machine, a memory, and one or more arithmetic elements.

47. (Original) The system of claim 46 wherein the state machine provides control, one or more lookup tables are stored in the memory, and the one or more arithmetic elements perform arithmetic operations for scaling or interpolation.

48. (Original) The system of claim 47 wherein the state machine is comprised of one or more ASICs.

49. (Original) The system of claim 48 wherein the one or more ASICs are synthesized logic.

50. (Previously Presented) The system of any of claims 1, 6, 9, 13, 18 or 19 wherein the count is averaged, filtered or summed over a plurality of symbol groups.

51. (Previously Presented) The method of any of claims 24, 29, 32, 34 or 36 further comprising averaging, filtering or summing the count over a plurality of symbol groups.